

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Atty. Docket No: 16313-0029

In re patent application of

COSTA E SILVA, OSWALDO DA

Serial No. 09/828,302

Filed: April 6, 2001

For: PHOSPHATASE STRESS-RELATED PROTEINS AND METHODS OF USE IN PLANTS

STATEMENT TO SUPPORT FILING AND SUBMISSION IN
ACCORDANCE WITH 37 C.F.R. §§ 1.821-1.825

Assistant Commissioner for Patents
Washington, D.C. 20231
Box SEQUENCE

Sir:

In connection with a Sequence Listing submitted concurrently herewith, the undersigned hereby states that:

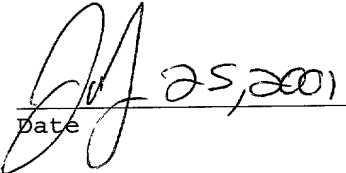
1. the submission, filed herewith in accordance with 37 C.F.R. § 1.821(g), does not include new matter;
2. the content of the attached paper copy and the attached computer readable copy of the Sequence Listing, submitted in accordance with 37 C.F.R. § 1.821(c) and (e), respectively, are the same; and
3. all statements made herein of their own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United

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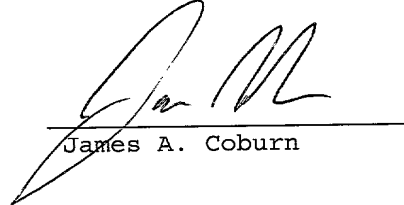
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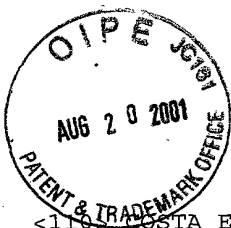
States Code and that such willful false statements may jeopardize the validity of the application or any patent resulting therefrom.

Respectfully submitted,


Date

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James A. Coburn



1/20

SEQUENCE LISTING

<110> COSTA E SILVA, OSWALDO DA
VAN THIELEN, NOCHA
CHEN, ROUYING
ISHITANI, MANABU

<120> PHOSPHATASE STRESS-RELATED PROTEINS AND METHODS OF USE
IN PLANTS

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<140> 09/828,302

<141> 2001-04-06

<150> 60/196,001

<151> 2000-04-07

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Lys	Gln	Val	Lys	Asn	Leu	Asn	Val	Asp	Pro	Gly	Ala	Arg	Gly	Asn	Gly	
				165						170					175	
Asn	Pro	Leu	Ser	Asn	Asn	Met	Met	Leu	Asn	Pro	Lys	Gly	Phe	Ala	Pro	
			180					185					190			
Arg	Leu	Ser	Met	Asn	Gly	Val	Ala	Ala	Asn	Arg	Ser	Thr	Pro	Ala	Ile	
		195					200					205				
Ser	Pro	Asp	Phe	Val	Phe	Pro	Pro	Gly	Gly	Ile	Pro	Ser	Leu	His	Leu	
	210					215					220					
Pro	Ser	Val	Trp	Ser	Asn	Glu	Thr	Ala	Leu	Val	Ala	Arg	Cys	Arg	Arg	
225					230					235					240	
Ala	Tyr	Ala	Asn	Ala	His	Ala	Tyr	His	Ile	Asn	Ser	Ile	Ser	Asn	Asn	
				245					250					255		
Ser	Asp	Cys	Glu	Thr	Tyr	Ile	Ser	Ala	Asp	Asp	Leu	Arg	Ile	Asn	Leu	
			260					265					270			
Trp	Asn	Leu	Glu	Val	Ser	Asp	Gln	Ser	Phe	Asn	Ile	Val	Asp	Ile	Lys	
		275					280					285				
Pro	Thr	Asn	Met	Glu	Asp	Leu	Thr	Glu	Val	Ile	Thr	Ser	Ala	Glu	Phe	
	290					295					300					
His	Pro	Ser	His	Cys	Asn	Val	Leu	Ala	Tyr	Ser	Ser	Ser	Lys	Gly	Ser	
305					310					315					320	
Ile	Arg	Leu	Ile	Asp	Met	Arg	Gln	Ser	Ala	Leu	Cys	Asp	Arg	His	Ser	
				325					330					335		
Lys	Leu	Phe	Glu	Glu	Thr	Glu	His	Ala	Gly	Ser	Arg	Ser	Phe	Phe	Thr	
			340					345					350			
Glu	Ile	Ile	Ala	Ser	Ile	Ser	Asp	Ile	Lys	Phe	Ala	Arg	Gly	Gly	Arg	
		355					360					365				
Tyr	Ile	Leu	Ser	Arg	Asp	Tyr	Met	Thr	Leu	Lys	Leu	Trp	Asp	Val	Asn	
	370					375					380					
Met	Glu	Ser	Ser	Pro	Val	Ala	Val	Phe	Lys	Val	His	Glu	Tyr	Leu	Arg	
385				390						395					400	
Pro	Lys	Leu	Cys	Asp	Leu	Tyr	Glu	Asn	Asp	Ser	Ile	Phe	Asp	Lys	Phe	
				405					410					415		
Glu	Cys	Cys	Leu	Ser	Gly	Asp	Gly	Met	Arg	Val	Ala	Thr	Gly	Ser	Tyr	
			420					425					430			
Ser	Asn	Leu	Phe	Arg	Val	Phe	Gly	Ala	Ala	Thr	Gly	Ser	Glu	Glu	Ala	
			435				440					445				
Ser	Thr	Leu	Glu	Ala	Ser	Lys	Thr	Pro	Asn	Arg	Arg	Ile	Val	Thr	Pro	
	450					455					460					

Pro Ser Lys Ala Gly Ser Arg Leu Ala Asn Leu Ala Arg Gly Arg Arg
465 470 475 480

Asp Asn Arg Arg Gly Gly Glu Ser Pro Gly Ile Asp Leu Asn Gly Gly
485 490 495

Val Gln Asp Phe Thr Ser Lys Leu Leu His Leu Ala Trp His Pro Ala
500 505 510

Ala Asn Val Ile Ala Phe Ala Leu Ala Arg Cys Ser Leu His Pro Thr
515 520 525

Ala Cys Thr Cys
530

<210> 13

<211> 306

<212> PRT

<213> Physcomitrella patens

<400> 13

Met Pro Ser Tyr Ala Asp Val Asp Arg Gln Ile Glu Gln Leu Ser Glu
1 5 10 15

Cys Lys Pro Leu Ser Glu Leu Glu Val Lys Asn Leu Cys Asp Gln Ala
20 25 30

Arg Thr Ile Leu Val Glu Glu Trp Asn Val Gln Pro Val Lys Cys Pro
35 40 45

Val Thr Val Cys Gly Asp Ile His Gly Gln Phe His Asp Leu Ile Glu
50 55 60

Leu Phe Arg Ile Gly Gly Lys Ala Pro Asp Thr Asn Tyr Leu Phe Met
65 70 75 80

Gly Asp Tyr Val Asp Arg Gly Tyr Tyr Ser Val Glu Thr Val Ser Leu
85 90 95

Leu Val Ala Leu Lys Val Arg Tyr Arg Asp Arg Ile Thr Ile Leu Arg
100 105 110

Gly Asn His Glu Ser Arg Gln Ile Thr Gln Val Tyr Gly Phe Tyr Asp
115 120 125

Glu Cys Leu Arg Lys Tyr Gly Asn Ala Asn Val Trp Lys Tyr Phe Thr
130 135 140

Asp Leu Phe Asp Tyr Leu Pro Leu Thr Ala Leu Ile Glu His Glu Ile
145 150 155 160

Phe Cys Leu His Gly Gly Leu Ser Pro Ser Leu Asp Thr Leu Asp His
165 170 175

Ile Arg Ala Leu Asp Arg Ile Gln Glu Val Pro His Glu Gly Pro Met
180 185 190

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Cys Asp Leu Leu Trp Ser Asp Pro Asp Asp Arg Cys Gly Trp Gly Ile
195 200 205

Ser Pro Arg Gly Ala Gly Tyr Thr Phe Gly Gln Asp Ile Ala Glu Gln
210 215 220

Phe Asn His Thr Asn Gly Leu Ser Leu Val Ala Arg Ala His Gln Leu
225 230 235 240

Val Met Glu Gly Tyr Asn Trp Cys Gln Asp Lys Asn Val Val Thr Val
245 250 255

Phe Ser Ala Pro Asn Tyr Cys Tyr Arg Cys Gly Asn Met Ala Ala Ile
260 265 270

Met Glu Ile Asp Glu Thr Met Asn Arg Ser Phe Leu Gln Phe Glu Pro
275 280 285

Ala Pro Arg Gln Ser Glu Pro Asp Val Thr Arg Lys Thr Pro Asp Tyr
290 295 300

Phe Leu
305

<210> 14
<211> 353
<212> PRT
<213> Physcomitrella patens

<400> 14
Met Gly Ile Tyr Leu Cys Ser Pro Lys Thr Asp Lys Thr Ser Glu Asp
1 5 10 15
Asp Glu Asn Ala Glu Leu Arg Tyr Gly Leu Ser Ala Met Gln Gly Trp
20 25 30
Arg Asp Ser Met Glu Asp Ala His Lys Ala Ile Leu Asn Val Asp Lys
35 40 45
Asn Thr Ser Thr Ser Ile Phe Gly Ile Phe Asp Gly His Gly Gly Lys
50 55 60
Leu Val Ala Lys Phe Cys Ala Lys His Leu His Gln Glu Val Leu Lys
65 70 75 80
Ser Glu Ala Tyr Ala Lys Gly Asp Leu Lys Ala Ser Leu Glu Tyr Ser
85 90 95
Phe Leu Arg Met Asp Glu Met Met Lys Gly Ala Ser Gly Trp Lys Glu
100 105 110
Leu Gln Ser Leu Glu Glu Thr Ser Ser Gln Leu Asp Lys Leu Gly Asn
115 120 125
Gly Asn Ser Ser Ser Asn Ala Arg Glu Asp Asp Glu Ser Asp Tyr Ser
130 135 140

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Tyr Ala Val Leu Thr Glu Ser Asn Asp Ser Asn Leu Ala Thr Lys Lys
145 150 155 160

His Lys Tyr Ser Asp Phe Gln Gly Pro Ile Tyr Gly Ser Thr Ala Val
165 170 175

Val Ala Leu Ile Arg Gly Asn Lys Leu Phe Val Ala Asn Ala Gly Asp
180 185 190

Ser Arg Cys Ile Met Ser Arg Arg Gly Glu Ala Val Asn Leu Ser Ile
195 200 205

Asp His Lys Pro Asn Leu Glu His Glu Arg Lys Arg Ile Glu Ser Ala
210 215 220

Gly Gly Phe Val His Gly Gly Arg Val Asn Gly Ser Leu Asn Leu Thr
225 230 235 240

Arg Ala Ile Gly Asp Met Glu Phe Lys Gly Arg Pro Asp Leu Pro Pro
245 250 255

Asp Lys Gln Val Val Thr Cys Cys Pro Asp Val Val Glu Val Asp Leu
260 265 270

Gly Pro Gly Asp Glu Phe Ile Val Leu Ala Cys Asp Gly Ile Trp Asp
275 280 285

Val Met Ser Ser Gln Ala Val Val Asp Phe Val Lys Ser Arg Leu Pro
290 295 300

Thr Thr Lys Thr Leu Ser Ser Leu Cys Glu Glu Ile Leu Asp Tyr Cys
305 310 315 320

Leu Ser Pro Thr Thr Arg Gln Gln Glu Gly Cys Asp Asn Met Ser Ile
325 330 335

Ile Ile Val Gln Pro Lys Gln Ser Gly Val Ala Ala Ser Ser Ser Thr
340 345 350

Asp

<210> 15
<211> 371
<212> PRT
<213> Physcomitrella patens

<400> 15
Met Val Glu Trp Val Met Lys Met Leu Met Ala Cys Trp Arg Pro Val
1 5 10 15

Gln Lys Tyr Thr His Leu Gly Glu Glu Asn Gly Asp Asn His Asp Pro
20 25 30

Leu Leu Trp His Lys Asp Leu Gly Asp His Ala Ala Gly Gln Phe Ser
35 40 45

Ile	Ala	Ala	Val	Gln	Ala	Asn	Ala	Ile	Leu	Glu	Asp	Met	Val	Gln	Val	
50			55			60										
Glu	Thr	Gly	Pro	Phe	Gly	Thr	Phe	Val	Gly	Val	Tyr	Asp	Gly	His	Gly	
65			70			75			80							
Gly	Pro	Glu	Ala	Ser	Arg	Tyr	Val	Asn	Asp	Ser	Leu	Tyr	Arg	His	Leu	
			85			90			95							
Gln	Lys	Phe	Ala	Thr	Gln	His	Gly	Gly	Met	Ser	Ser	Glu	Val	Leu	Gln	
			100			105			110							
Gln	Ala	Phe	Lys	Gln	Thr	Glu	Glu	Gly	Phe	Leu	Glu	Ile	Val	Arg	Asp	
			115			120			125							
Ser	Trp	Leu	Thr	Lys	Pro	Gln	Ile	Ala	Ala	Val	Gly	Ser	Cys	Cys	Leu	
130			135			140										
Val	Gly	Val	Val	Trp	Glu	Cys	Lys	Leu	Tyr	Ile	Ala	Ser	Leu	Gly	Asp	
145			150			155			160							
Ser	Lys	Ala	Val	Leu	Gly	Arg	Phe	Ser	Arg	Asn	Leu	Gln	Ser	Val	Ile	
			165			170			175							
Ala	Thr	Glu	Ile	Ser	Thr	Glu	His	Asn	Ala	Ser	Val	Glu	Ala	Val	Arg	
			180			185			190							
Gln	Asp	Leu	Gln	Ala	Ala	His	Pro	Asp	Asp	Pro	Arg	Ile	Val	Val	Leu	
195			200			205										
Arg	His	Gly	Val	Trp	Arg	Val	Lys	Gly	Leu	Ile	Gln	Val	Ser	Arg	Ser	
210			215			220										
Ile	Gly	Asp	Val	Tyr	Leu	Lys	Lys	Ala	Glu	Phe	Asn	Arg	Glu	Pro	Leu	
225			230			235			240							
Ile	Gly	Arg	Phe	Arg	Leu	Pro	Glu	Pro	Leu	Gln	Arg	Pro	Val	Met	Ser	
			245			250			255							
Ala	Glu	Pro	Asp	Ile	Arg	Val	Ile	Asp	Leu	Thr	Pro	Asp	Val	Glu	Phe	
			260			265			270							
Val	Ile	Phe	Ala	Ser	Asp	Gly	Leu	Trp	Glu	His	Leu	Ser	Asn	Gln	Glu	
275			280			285										
Ala	Val	Asp	Ile	Val	His	Lys	Tyr	Pro	Arg	Ala	Gly	Ile	Ala	Arg	Gln	
290			295			300										
Leu	Ile	Arg	Tyr	Ala	Leu	His	Glu	Ala	Ala	Lys	Lys	Arg	Glu	Met	Arg	
305			310			315			320							
Tyr	Ser	Asp	Leu	Lys	Lys	Ile	Glu	Arg	Gly	Ile	Arg	Arg	His	Phe	His	
			325			330			335							
Asp	Asp	Ile	Thr	Val	Val	Val	Val	Phe	Leu	Asp	His	Asn	Leu	Val	Ser	
			340			345			350							

Lys Pro Ser
370

<220>
<223> Description of Artificial Sequence: Primer

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<210> 17
<211> 19
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Primer

<400> 17
ctaaagggaa caaaagctg 19

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<210> 18
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<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Primer

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<400> 18
tgtaaaacga cggccagt 18
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<210> 19
<211> 26
<212> DNA
<213> Artificial Sequence
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<220>
<223> Description of Artificial Sequence: Primer

<400> 19
ctgccgttgg aggcatactc gccatc 26

<210> 20
<211> 34
<212> DNA

<210> 25

<211> 25
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<400> 25
 acatcggggcc ctctgtgcggc acttc 25

<210> 26
 <211> 33
 <212> DNA
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<220>
 <223> Description of Artificial Sequence: Primer

<400> 26
 gcgttaacgc gcggaggaga gcggatcggg tag 33

<210> 27
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 <212> DNA
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<400> 27
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<210> 28
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 <212> DNA
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<400> 28
 gcgatatcga tttgcaaggc cgaagtgcac aaga 34

<210> 29
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 gcgatatcga aggcagaagg caactcccag tt 32

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<220>
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26

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<400> 41	27
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<210> 44	
<211> 26	
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<220>

<223> Description of Artificial Sequence: Primer

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cacgaccacc atggacgaag cctcca

26

<210> 45

<211> 26

<212> DNA

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<400> 45

ggctgtgctc ggtagattct ctgca

26

<210> 46

<211> 25

<212> DNA

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<220>

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<400> 46

cagcctcttg gttggacaag tgctc

25

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